

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Original) A projectile dispenser having at least one expandable bellows, at least one spool for holding elongated projectiles in unidirectional parallel relation, and at least one collar surrounding said at least one spool for retaining said projectiles within said at least one spool; means for releasing said at least one spool in predetermined time relation from said dispenser, and means for releasing said elongated projectiles from said at least one spool in specific sequence following separation from said dispenser.

2. (Original) In an airborne projectile dispenser having a principal longitudinal axis, the improvement comprising: an expandable bellows having an axis of expansion along said principal axis, said bellows including self-contained gas-producing means, and timing means for operating said gas-producing means, at least one projectile carrying spool being in contact with an end surface of said bellows.

3. (Currently Amended) In an airborne projectile dispenser, the improvement comprising: at least one spool for supporting a plurality of projectiles in substantially parallel relation, a collar retaining said projectiles within said at least one spool, and means for opening said collar to release said projectiles, said last-

~~mentioned~~ means for opening including ~~the~~ means for timing the period of release of said collar to release said projectiles from said at least one spool in specific sequence following separation from said dispenser.

4. (Original) The improvement set forth in claim 3, including a cable surrounding said collar, and timed means for cutting said cable to release said collar from around said spool.

5. (Original) The improvement set forth in claim 3, including plural spools and collars arranged in coaxial alignment, said collars being of variable radial diameter relative to each other, so that when said spools are arranged within said dispenser, individual projectiles within spools are laterally offset with respect to corresponding projectiles in other spools to obtain a uniform projectile distribution pattern when meeting a target.

6. (Original) The improvement set forth in claim 4, in which said means for cutting said cable includes a capacitively powered circuit board.

7. (Canceled)

8. (Currently Amended) In a projectile dispenser having plural spools for retaining projectiles in parallel relation prior to axially-oriented release from said dispenser, the improvement comprising: expandable bellows ~~means~~ positioned between at least some of said spools for serially separating said spools, and timing

~~means for controlling~~ timed controller for controlled expansion of said bellows after release from said projectile dispenser, for spacing of the distance between said ~~spool elements~~ spools after discharge from said dispenser.

9. (Currently Amended) A projectile dispenser in accordance with claim 8, in which said bellows are operated by an ignitable ~~gas-producing~~ means for producing gas, and means for timing the ignition of said ~~gas-producing~~ means for producing gas.

10. (Canceled)

11. (Currently Amended) A projectile dispenser system comprising:
an airborne projectile dispenser having a principal axis;
a plurality of projectile-carrying spools carried by said airborne dispenser in axial alignment with said principal axis for serial discharge therefrom, said spools carrying plural projectiles in mutually parallel relation for radially-directed discharge from said spools;

~~collar~~ means for maintaining said projectiles within said spools prior to discharge;

~~cable~~ means for holding said ~~collar~~ means for maintaining in fixed position;

~~cable-severing~~ means for releasing said ~~collar~~ means for maintaining;

timing means for initiating operation of said ~~cable-severing~~ means for releasing;

expandable bellows ~~means~~ interconnected to said spools at one end thereof;

means for selectively inflating said bellows ~~means~~ at timed intervals for serially-ejecting said ~~spool-means~~ spools from said airborne dispenser; whereby said spools may be positioned in mutually-axially aligned locations prior to discharge of projectiles from said spools.

12. (Currently Amended) A projectile dispenser system in accordance with claim 11, said expandable bellows being expanded by electrically ignited gunpowder of predetermined quantity, thereby determining the degree of mutual spacing of said ~~spool-means~~ spools.

13. (Original) A projectile dispenser in accordance with claim 11, in which at least some of said spools comprise means for interconnection with an adjacent spool, whereby at least a pair of spools are maintained in abutted relation after discharge from dispenser.

14. (Currently Amended) A dispenser system in accordance with claim 11, in which the discharge of projectiles from each spool is timed such that each ~~row~~ of the plural projectiles in mutually parallel relation has the same amount of time to expand before reaching a target.

15. (New) A projectile dispenser in accordance with claim 11, wherein said means for maintaining said projectiles within said spools prior to discharge is a collar.

16. (New) A projectile dispenser in accordance with claim 11, wherein said means for holding said means for maintaining in fixed position is a cable.

17. (New) A projectile dispenser in accordance with claim 16, wherein said means for releasing is a cable cutter.

18. (New) A system for dispensing projectiles from a munition, the system comprising:

a plurality of spools, each spool arranged in sequential relationship along a linear axis and each spool including a plurality of projectiles; and

a bellows connected between at least two of the plurality of spools, the bellows expandable along the linear axis from a collapsed compacted state to an elongated extended state.

19. (New) The system of claim 18, comprising at least one controller to initiate ejection of the projectiles from the plurality of spools.

20. (New) The system of claim 19, wherein the controller initiates ejection of projectiles on sequential spools in time-related manner such that initiation of each sequential spool is at an essentially common point in space.

21. (New) The system of claim 18, wherein the plurality of projectiles on at least one of the plurality of spools are all positioned with a head of the projectile arranged in a common orientation.

22. (New) The system of claim 21, wherein an aft stabilizing fin on a first group of the plurality of projectiles is offset from an aft end of the projectile a first distance and an aft stabilizing fin on a second group of the plurality of projectiles is offset from an end of the projectile a second distance, the first distance different from the second distance and wherein a diameter of an aft portion of the projectiles is reduced by an amount approximating a thickness of the aft stabilizing fin.

23. (New) The system of claim 22, wherein the first distance is at least one stabilizing fin length different than the second distance.

24. (New) The system of claim 18, wherein the plurality of projectiles are mounted on at least one of the plurality of spools with a collar, the collar having a flat inner surface adjacent the projectiles and a curved outer surface.

25. (New) The system of claim 24, wherein a thickness of the collar on each subsequent spool of the plurality of spools has a different thickness.

26. (New) The system of claim 24, wherein the inner surface of a first collar on a first spool is mounted offset from a center axis of the first spool a different distance from the inner surface of a second collar on a subsequent spool, and the curved outer surface of the first collar and the curved outer surface of the second collar are at a same radial distance from an axial centerline of the munition.

27. (New) The system of claim 24, wherein the collar includes a plurality of portions and the aggregate of each of the inner surfaces forms a geometric shape.

28. (New) The system of claim 27, wherein the geometric shape is one of a hexagon and an octagon.

29. (New) The system of claim 18, wherein the bellows are releasably connected to the two sequential spools.

30. (New) The system of claim 18, wherein in the elongated extended state of the bellows, sequential spools are connected by the bellows.

31. (New) The system of claim 30, wherein sequential spools are separated by a distance related to a forward traveling velocity of the plurality of spools such that every row of projectiles expands to a similar pattern and size.

32. (New) The system of claim 18, wherein a length of the elongated extended bellows results in a separation distance between released projectiles of sequential spools sufficient to minimize interference drag.

33. (New) The system of claim 32, wherein the separation distance is at least 5 inches.

34. (New) The system of claim 18, wherein in the elongated extended state of the bellows, sequential spools are separated from the bellows and from each other.

35. (New) The system of claim 18, comprising an ejection system to release the plurality of spools and bellows from the munition.

36. (New) The system of claim 18, comprising means to remove an outer portion of the munition to expose the plurality of spools and the bellows.

37. (New) A method of dispensing projectiles from a munition, the munition having a forward end and an aft end along a linear axis and including a system having a plurality of spools, each spool arranged in sequential relationship along the linear axis and each spool including a plurality of projectiles, and a bellows connected between at least two of the plurality of spools, the bellows expandable along the linear axis from a collapsed compacted state to an elongated extended state, the method comprising:

expanding successive bellows in a sequence from an aft end bellows to a forward end bellows;

releasing the plurality of projectiles from a first spool to form a first shape at a first point in a travel path of the plurality of projectiles from the first spool

releasing the plurality of projectiles from a second spool in a timed relationship relative to releasing the plurality of projectiles from the first spool to form a second shape,

wherein the plurality of projectiles from the second spool generally travel along the travel path of the plurality of projectiles from the first spool and the second shape is substantially similar to the first shape at the first point in the travel path.